

Northeast Regional Association of Coastal Ocean Observing Systems

Progress Report

University of Southern Maine

NOAA Grant Number: NA 05 NO54731127

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For the Period June 1 to November 30, 2006

PROJECT SUMMARY

A summary of goals of the cooperative agreement for RA development, to provide context for progress and accomplishments to date:

The **goal** of this project is to establish the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) in a manner consistent with all certification requirements of the U.S. IOOS.

Objectives leading to this goal include:

- (1) Respond to and, in the governance of the RA, provide a voice to users;
- (2) Build an RA based on the principle of coordinated decentralization, respecting the autonomy of existing coastal ocean observing programs in the Northeast, while leveraging their skills and contributions into a coherent, standards-based “system of systems”;
- (3) Develop synergies between the national backbone of the RCOOS and the regional enhancements, with strong connections to the Mid-Atlantic region, as well;
- (4) Assure that the “conveyor belt” is in place, by which research in ocean observing technologies and modeling feed ocean observing operations, and operations, in turn, inform the need for research; and
- (5) Build on recent breakthroughs in dynamic data sharing, both technically and institutionally, and involving oceanographic, biologic, and geologic providers, to create an effective, standards-based data management and communications subsystem.

PROGRESS AND ACCOMPLISHMENTS

An update on the progress made during the semiannual period of performance:

RA Organizational Structure

Throughout the second half of 2006, the PI team and GoMOOS worked with the RA Advisory Committee, partners among academic research institutions, and members of the Gulf of Maine Ocean Data Partnership (representing many key governmental agencies) to establish the functions and a governing model for a Northeast Regional Association of Coastal Ocean Observing Systems. Highlights included:

1. Following up on a series of one-on-one meetings with academic research institutions in the first half of the year, the University of New Hampshire (Dr. Berrien Moore and Dr.

Janet Campbell) in October convened leadership from eight of the institutions to discuss their role in a new RA and the roles the institutions should play in shaping and participating in its governance. A summary of the meeting is attached.

2. The RA Advisory Committee discussed the elements of a governing structure and completed an exercise in which they selected preferred approaches for each of the elements (legal structure, sub-regional representation, dealing with conflicts of interest, governing board, etc.). The results of the exercise were summarized in a matrix, which is attached.

3. At its annual December meeting, Evan Richert and David Mountain led a discussion of the Ocean Data Partnership on the desired role of the ODP in the governance of an RA.

Based on this input, as well as review of the approaches being adopted by RAs elsewhere in the U.S., a strawman for governance, including stated functions and principles of governance, was prepared and sent to the RA Advisory Committee in advance of its January 2007 meeting. The strawman is attached.

Planning and Implementation

Priorities, products, system design: Three “suites” of high priority, ocean observing applications are emerging for the Northeast RA:

1. A group of applications relating to health and safety, and all of which have common requirements for circulation models and physical oceanographic observations. These are prediction of inundation, assessment of water quality (with immediate attention to assisting managers in meeting annual EPA reporting requirements), and prediction and tracking of harmful algal blooms. Co-investigators are in the process of evaluating existing assets to achieve the desired products and the high priority gaps in the observing and modeling subsystems that will need to be addressed. Much emphasis will be placed on using existing assets to achieve products needed by end users.

2. Living marine resources. Assessing the observing and modeling requirements for living marine resources is following two paths. The first is building on a proof-of-concept project in which NOAA’s Northeast Fisheries Science Center, the Maine Dept. of Marine Resources, and GoMOOS seek to serve the Northern Shrimp Technical Council by making their individual, existing data bases on shrimp abundance, catch, and environmental conditions in the Gulf of Maine interoperable. The second, proposed by Dr. Brian Rothschild of the University of Massachusetts-Dartmouth, seeks to create a simulation of observing and modeling requirements to improve the tracking and prediction of population counts of groundfish species in the Gulf of Maine, in part through enhanced observation of plankton, biomass, and habitat conditions. The concept involves deployment of acoustical optical platforms and AUVs.

3. Whale-ship interactions. Scientists at Woods Hole Oceanographic Institution are examining the observational requirements that would be necessary to more reliably detect the presence of whales in shipping lanes and to get that information to ships in real time. Conceptually, this involves both integrating data from existing observing assets and deploying an array of hydrophones broadly in New England waters.

It is important to note that these applications will supplement the ongoing observing and predictions from various coastal ocean observing systems and models in the region. In addition to national backbone assets, these include assets operated by the Coastal Ocean Observing Center at UNH, including a buoy in Great Bay; the Martha's Vineyard Ocean Observatory south of Edgartown, Mass.; and the GoMOOS array of buoys and CODAR units. The value of the existing real-time and archived data sets and products provided by these systems is indicated by GoMOOS's experience during 2006. During the year, GoMOOS's web site recorded 1.4 million page views – an average of more than 100,000 per month – not including the automatic downloads to the National Weather Service and other large “backbone” providers. Users include fishermen, commercial mariners, recreational boaters, U.S. Coast Guard, educators, scientists, resource managers, airline pilots, and private industry weather forecasters, contractors, engineers, and surveyors.

Business plan: Per the schedule outlined in our proposal, development of a business plan will occur during the current year (2007). Substantial informal thought has been given to the plan, including discussions around sustainability of the systems that will comprise the Regional Association, geographic coverage, the model of a “distributed lab” that emphasizes integration of existing, ongoing data sets with sustained funding behind them, and diversification of system revenues. These and other topics will be more formally addressed in the development of the business plan this coming year.

Regional data management: The Gulf of Maine Ocean Data Partnership completed its second full year with its annual meeting in December 2006 and adoption of a 2007 work plan. Through its work plan, the Partnership has been following a critical path that is moving from discoverability to accessibility to interoperability of partners' data bases. The partnership now includes 23 state and federal agencies, non-profit organizations, and research institutions from both the U.S. and Canada, all of which have ongoing data sets concerning the Gulf of Maine. They include biological, physical oceanographic, and geological data sets. As of the end of 2006, some 180 data sets from the Partners had been registered with NASA's National Global Change Directory using common metadata formats. Emphasis during 2007 will be on both QA/QC of the metadata associated with the data sets and on working with partners to expand accessibility to the data. Meanwhile, GoMOOS, the Gulf of Maine Council on the Marine Environment, and partners are experimenting with standards-based approaches to making the data sets interoperable. See, for example, <http://www.gomoos.org/gomc/map/>, which is a proof-of-concept that enables web-based combining of sea grass and salt marsh data sets from several institutions. Finally, the Ocean Data Partnership has applied for EPA funding for a National Water Quality Monitoring Network Pilot Project in the Northeast RA region.

Stakeholder Engagement

Stakeholder engagement has been proceeding on four fronts:

1. With a coalition of academic research institutions, as described above under RA Organizational Structure. Agreement within the coalition as to its role and participation in the NERACOOS is considered critical to the success of the RA. In turn, this coalition is seeking to establish direct communications with the New England Governors Association and Eastern Canadian Premier to build state- and province-level support for a NERACOOS.
2. With end users around the development of several prototype products, such as a hydrodynamic circulation model that water quality managers would use in assessing conditions of embayments they are required to monitor, and a Northern Shrimp assessment product of interest to the Northern Shrimp Technical Council.
3. With the Ocean Data Partnership, which will be integral to the ongoing development of the data management and communications component of the RA; see above.
4. With the RA Advisory Committee, which, with representation from 17 economic, governmental, and scientific sectors, is the primary sounding board for policy decisions around the development of the RA. Given the importance of extending the presence of the RA beyond the Gulf of Maine and into the Southern New England Bight, discussions are ongoing with representatives from the Southern New England Area to establish an observing system in this sub-region parallel to GoMOOS in the Gulf of Maine. As part of this, a Southern New England sector has been identified as part of the Advisory Committee, and an invitation for representatives issued. (Representatives from the Southern New England region have participated in the Advisory Committee from the beginning, but as representatives of other sectors. This will give specific geographic representation from Southern New England.)

Web sites have been developed for both NERACOOS and the Ocean Data Partnership. The URLs are:

www.neracoos.org

and

<http://www.gomodp.org/>

Both are provided technical assistance through GoMOOS.

SCOPE OF WORK

The highest priorities for the next funding period:

The highest priorities fall into four categories.

1. RA Organizational Structure – It is anticipated that the “strawman” governance proposal will be reviewed by the RA Advisory Committee at its January 2007 meeting, will be revised for its April 2007 meeting, and will be presented for adoption at its August 2007 or October 2007 meeting. The objective is to incorporate the RA during the fall of 2007 and to have its initial governing board in place by the end of the year.
2. Product Development, System Priorities and Budget Requirements – It is anticipated that prototype products will be completed for the inundation, water quality assessment, and HAB applications, the shrimp data integration application, and potentially for the whale-ship interactions application. The groundfish observing system application is conceptual and will require a longer term effort, through simulation of the observational and modeling requirements. However, this, too, must be firmly based in the needs of users of the system, in particular fisheries managers and industry. Based on these prototypes and explorations, the highest priority system requirements to fill gaps in the observing network will be identified, with an estimate of costs.
3. Business Plan – By the end of the next funding period, a business plan will be developed for presentation to and adoption by the new NERACOOS Board of Governors. The business plan will incorporate a standards-based, system engineering approach that is at the heart of the organization of the NERACOOS (and that is essential to the integrative nature of the RA); the budget requirements identified in product development and system priorities; likely costs and benefits of the system; and target sources of funding.
4. Data Integration – By the end of the next funding period, which coincides roughly with the Ocean Data Partnership’s 2007 work plan, the objective is to have in place pilot working products that demonstrate the interoperability of multiple data bases held by the partners.

LEADERSHIP PERSONNEL

There has been no change in leadership personnel. Importantly, however, during the last semiannual period, GoMOOS has been able to fully staff up to support the development of the NERACOOS, with the addition of Jennifer Levin as Project Coordinator to assist Tom Shyka as Director of Program Development.

BUDGET ANALYSIS

The first two years of the Northeast RA grant totals \$749,419. (The third year will add \$262,974 to this total).

As of December 31:

\$254,377 has been expended

\$340,815 has been additionally encumbered, primarily in contracts with the Gulf of Maine Ocean Observing System and the University of New Hampshire

\$595,192 has been expended or encumbered.

In percentage terms:

34% of the funds granted for the first two years have been spent;

79% of the funds granted for the first two years have been spent or encumbered.

The spending rate lags the encumbrance rate primarily because the Northeast RA grant did not become actually available to the University of Southern Maine until September 2005, five months after the theoretical start date of April 1, 2005. Thus, as of December 31, 2006, the project has been up and running for 1 year and 4 months, with subcontracts in place only a little over one year. Over the last half-year, the encumbered sums are being spent down at an accelerating rate and are expected to be spent down by the third quarter of 2007.